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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,678	09/07/2006	Ulf Skarby	2380-1174	8758

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EXAMINER	
DAGLAWI, AMAR A	

ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
09/29/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/598,678	SKARBY ET AL.	
	Examiner	Art Unit	
	AMAR DAGLAWI	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-29 and 31-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-29 and 31-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/03/2009 has been entered.

Response to Amendment

2. Claims 17-34 are pending in the current office action. Claims 1-17 are cancelled. Claim 30 is cancelled.

Response to Arguments

3. Applicant's arguments with respect to claims 17-34 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 17-29, 31-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Scott (US 5,742,583)

With respect to claim 17, Scott teaches A method comprising:

receiving at a receiver diversity antenna arrangement that comprises at least two antennas that are spaced apart and/or that have different polarizations, each antenna of receiving a radio frequency (RF) signal transmitted from the same transmitter, where each RF signal received at each of the spaced apart antennas is at the same frequency and carries the same information (Fig.4, col.10, lines 5-37, col.2, lines 1-32) [The system taught in Scott is a TDMA system and thus the RF signals received carry the same information];

converting one or more received antenna signals into a corresponding number of different frequency signals by mixing with a first set of corresponding number of reference signals (Fig.4, col.10, lines 38-67, col.11, lines 1-31);

forwarding the diversity signals received on all the antennas of the receiver diversity antenna arrangement, of which one or more of the received diversity signals have been frequency converted and provided to the a radio base station on a single feeder such that a number of feeders required between the radio base station and the receiver diversity antenna arrangement is reduced (Fig.4, Fig.2, col.10, lines 5-67, col.11, lines 1-31); and

diversity processing two or more of the forwarded diversity signals to obtain a single enhanced received signal corresponding to the transmitted signal (Fig.4, col.11, lines 1-31).

With respect to claim 18, Scott further teaches he diversity antenna arrangement comprises n antennas, said method comprising the steps of: converting all received

antenna signals except one, and forwarding the non-converted antenna signal together with all frequency-converted signals to the radio base station on the single feeder, thus providing n-way diversity with a single feeder (Fig.4, col.10, lines 1-67).

With respect to claim 19, Scott further teaches the diversity antenna arrangement comprises n antennas, said method comprising the step of converting all received antenna signals and forwarding them to the radio base station on the single feeder, thus providing n-way diversity with a single feeder (Fig.4, col.10, lines 1-67).

With respect to claim 20, Scott further teaches converting the frequency-converted signals to other frequencies by mixing them with a second set of reference signals in order to obtain another set of frequency-converted signals which are forwarded to the base station on the single feeder (Fig.4, col.10, lines 1-67).

With respect to claim 21, Scott further teaches the diversity antenna arrangement comprises a first and a second antenna, said method comprising the steps of: converting the antenna signal on the second antenna into an intermediate (IF) signal, and forwarding the IF signal together with the non-converted antenna signal on the first antenna to the radio base station on a single feeder, thus providing 2-way diversity with a single feeder (Fig.4, col.10, lines 38-67).

With respect to claim 22, Scott further teaches there are two diversity antenna arrangements, one comprising a first and a second antenna, the other comprising a third and fourth antenna, said method comprising the steps of converting the RF signals from the second and fourth antennas into first and second intermediate

frequency (IF) signals, both of the same intermediate frequency; forwarding the non-converted antenna signal on the first antenna together with the first IF signal on a first feeder to the base station; and forwarding the non-converted antenna signal on the third antenna together with the second IF signal on a second feeder to the base station, thus providing 4-way diversity with two feeders (Fig.1, col.3, lines 10-31, Fig.4, col.10, lines 38-67).

With respect to claim 23, Scott further teaches converting, at the radio base station, the frequency-converted signals into other frequency-converted signals, all on the same intermediate frequency, by mixing them with a set of reference signals, and subjecting the twice frequency converted signals on the common intermediate frequency to the diversity signal processing (Fig.2, col.4, lines 13-40).

With respect to claim 24, Scott teaches A receiver diversity antenna arrangement (abstract) comprising:

at least two diversity antennas that are spaced apart and/or that have different polarizations, each antenna being adapted for reception of radio frequency (RF) signal transmitted from the same transmitter, where each RF signal is at the same frequency and carries the same information (Fig.4, col.10, lines 5-37, col.2, lines 1-32) [The system taught in Scott is a TDMA system and thus the RF signals received carry the same information];

one or more frequency converters each adapted to convert a respective antenna

signal to a respective different frequency signal by mixing it with a predetermined frequency (Fig.4, col.10, lines 38-67, col.11, lines 1-31);

a combiner for combining the signals received on the antennas, of which signals one or more have been frequency converted, to form a composite signal which is forwarded to a radio base station on a single feeder (Fig.4, Fig.2, col.10, lines 5-67, col.11, lines 1-31); and

a diversity processor for diversity processing two or more of the forwarded diversity signals to obtain a single enhanced received signal corresponding to the transmitted signal (Fig.4, col.11, lines 1-31).

With respect to claim 25, Scott further teaches a signal from a diversity antenna follows a diversity branch, the receiver diversity antenna arrangement further comprising providing a frequency converter in each diversity branch except one (abstract, col.10, lines 38-67).

With respect to claim 26, Scott further teaches a signal from a diversity antenna follows a diversity branch, receiver diversity antenna arrangement further comprising providing a frequency converter in each diversity branch (abstract, col.10, lines 38-67)

With respect to claim 27, Scott further teaches a second set of frequency converters are adapted to convert the frequency converted signals into another set of frequency converted signals for transport to the radio base station on the single feeder (Fig.4, col.10, lines 5-37).

With respect to claim 28, Scott further teaches there are two diversity antennas, one of which is connected to a first duplex filter so as to provide for reception and transmitting, receiver diversity antenna arrangement further comprising: a single frequency converter converting the antenna signal from the second antenna to an intermediate frequency to form an IF signal, wherein the combiner is configured to combine the original RX signal from the first antenna with the IF signal into a composite signal, and the single feeder is configured to forward the composite signal to the base station, thus providing 2-way diversity with one feeder (Fig.4, col.10, lines 38-67, col.11, lines 1-31).

With respect to claim 29, Scott further teaches a duplicate diversity antenna arrangement to provide a composite diversity antenna arrangement comprising four antennas and two feeders, each antenna arrangement comprising a respective single feeder, thus providing 4-way diversity with two feeders (Fig.1, col.3, lines 10-31, Fig.4, col.10, lines 38-67).

With respect to claim 31, Scott further teaches a radio base station comprising a receiver diversity antenna arrangement (Fig.2).

With respect to claim 32, Scott further teaches a sit comprising a radio base station (RBS) coupled to at least one tower-mounted unit (TMA) via a single feeder and including a receiver diversity antenna arrangement (Fig.2).

With respect to claim 33, Scott further teaches the two antennas are spaced apart and each of the two spaced apart antennas has different polarization (Fig.4, col.10, lines 5-38).

With respect to claim 34, Scott further teaches the two antennas are spaced apart and each of the two spaced apart antennas has a different polarization (Fig.4, col.10, lines 5-38).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMAR DAGLAWI whose telephone number is (571)270-1221. The examiner can normally be reached on Monday- Friday (7:30 AM- 5:00 AM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NGUYEN DUC can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amar Daglawi
Examiner
Art Unit 2618

/Amar Daglawi/
Examiner, Art Unit 2618

/Duc Nguyen/

Supervisory Patent Examiner, Art Unit 2618

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